

## TRANSMITTAL LETTER TO THE UNITED STATES

SHC0165

DESIGNATED/ELECTED OFFICE (DO/EO/US)

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

CONCERNING A FILING UNDER 35 U.S.C. 371

10/030728

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

PCT/JP00/04664

JULY 12, 2000

JULY 12, 1999

TITLE OF INVENTION

BREATHABLE LIQUID-IMPERVIOUS COMPOSITE SHEET

APPLICANT(S) FOR DO/EO/US

MICHIO MATSUSHITA AND TAKESHI HANAJIRI

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☒ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
  - a. ☒ is attached hereto.
  - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☒ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☒ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☒ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

## Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☒ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

PCT/RO/101; PCT/RO/105; PCT/ISA/202; PCT/ISA/220; PCT/IB/301; PCT/IB/304; PCT/IB/308; PCT/IB/332;  
 PCT/IPEA/401; PCT/IPEA/402; PCT/IPEA/408; PCT/IPEA/416; WRITTEN REPLY TO IPER OF 6/25/01 AND  
 LETTER REQUESTING AMENDMENT OF 6/25/01 AND ENGLISH TRANSLATION OF LETTER

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

INTERNATIONAL APPLICATION NO.

ATTORNEY'S DOCKET NUMBER

10/030728

PCT/JP00/04664

SHC0165

24. The following fees are submitted:

**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :**

- ☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... \$1040.00
- ☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... \$890.00
- ☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$740.00
- ☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$710.00
- ☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$100.00

**ENTER APPROPRIATE BASIC FEE AMOUNT =****CALCULATIONS PTO USE ONLY****\$890.00**

Surcharge of \$130.00 for furnishing the oath or declaration later than \_\_\_\_\_ months from the earliest claimed priority date (37 CFR 1.492 (e)). ☐ 20 ☐ 30

**\$0.00**

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	10 - 20 =	0	x \$18.00	<b>\$0.00</b>
Independent claims	1 - 3 =	0	x \$84.00	<b>\$0.00</b>
Multiple Dependent Claims (check if applicable).			<input type="checkbox"/>	<b>\$0.00</b>

**TOTAL OF ABOVE CALCULATIONS = \$890.00**

☒ Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.

**\$0.00****SUBTOTAL = \$890.00**

Processing fee of \$130.00 for furnishing the English translation later than \_\_\_\_\_ months from the earliest claimed priority date (37 CFR 1.492 (f)). ☐ 20 ☐ 30

**\$0.00****TOTAL NATIONAL FEE = \$890.00**

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐

**\$0.00****TOTAL FEES ENCLOSED = \$890.00**

**Amount to be:**  
**refunded** \$  
**charged** \$

- a. ☒ A check in the amount of **\$890.00** to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \_\_\_\_\_ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **02-0385**. A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

**SEND ALL CORRESPONDENCE TO:**

Michael S. Gzybowski  
Baker & Daniels  
111 East Wayne Street, Suite 800  
Fort Wayne, IN 46802  
(219) 424-8000

SIGNATURE

Michael S. Gzybowski

NAME

32,816

REGISTRATION NUMBER

January 11, 2002

DATE

PATENT APPLICATIONIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

*Group*  
*Art Unit:* Unknown  
  
*Attorney*  
*Docket No.:* SHC0165  
  
*Applicant:* Michiyo Matsushita et al.  
  
*Invention:* BREATHABLE LIQUID-IMPERVIOUS  
 COMPOSITE SHEET  
  
*Serial No.:* Unknown  
*Filed:* Herewith  
  
*Internat'l Serial* PCT/JP00/04664  
*Internat'l Filing*  
*Date:* July 12, 2000  
  
*Earliest Priority*  
*Date:* July 12, 1999  
  
*Examiner:* Unknown

Certificate Under 37 C.F.R. 1.10

 "EXPRESS MAIL" MAILING LABEL NUMBER  
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 DATE OF DEPOSIT January 11, 2002  
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 TANT COMMISSIONER FOR PATENTS WASHINGTON, DC  
 20231
on January 11, 2002
  
 Michelle L. Neal
PRELIMINARY AMENDMENT

Box PCT  
 Attn: DO/EO/US  
 Assistant Commissioner for Patents  
 Washington, DC 20231

Sir:

Prior to the examination of the above-identified application, please amend the application  
 as follows:

IN THE TITLE

Please change the title to read "BREATHABLE LIQUID-IMPERVIOUS COMPOSITE  
 SHEET"

IN THE SPECIFICATION

Please replace the first full paragraph on page 2 with the following:

- It is an object of this invention to provide a composite sheet that is free from

generation of fibrous waste and offers a comfortable touch.- -

Please replace the second full paragraph on page 2 with the following:

--The breathable liquid-impervious composite sheet according to the present invention comprises a breathable liquid-impervious sheet made of thermoplastic synthetic resin that is covered with thermoplastic synthetic fibers. The synthetic fibers are continuous fibers. The sheet made of synthetic resin has its opposite surfaces covered with the continuous fibers and the sheet made of synthetic resin is intermittently bonded to the continuous fibers on the opposite surfaces.- -

Please replace the first full paragraph on page 3 with the following:

--The sheet made of synthetic resin is an air-permeable and liquid-impervious assembly of thermoplastic fibers, the assembly having a maximum breathability of 200 sec/100 cc as measured in accordance with the method B of JIS (Japanese Industrial Standards) L 1096 and a water resistance of at least 300 mm as measured in accordance with the method A of JIS L 1092.-

Please replace the paragraph beginning on page 4 and continuing on page 5 with the following:

--The intermediate layer 3 is formed by a breathable liquid-impervious sheet made of thermoplastic synthetic resin, for example, stretched film 8 made of thermoplastic synthetic resin such as polyethylene. The stretched film 8 has a thickness of 0.01 - 0.1 mm and contains inorganic filler grains of calcium carbonate or barium sulfate. The intermediate layer 3 may be formed also from a fibrous assembly such as a melt blown nonwoven fabric made of polypropylene or the like. Breathable liquid-impervious nature of the intermediate layer 3 can

be quantitatively expressed by breathability and water resistance. Preferably, the intermediate layer 3 has the maximum breathability of 200 sec/100 cc as measured in accordance with the method B of JIS L 1096 and a water resistance of at least 300 mm as measured in accordance with the method A of JIS L 1092.- -

#### IN THE CLAIMS

Please cancel Claims 2 and 3 without prejudice or disclaimer and amend Claim 1 as follows:

- - 1. (Amended) A breathable liquid-impervious composite sheet comprising:

a breathable liquid-impervious sheet having opposite surfaces and comprising an air-pervious and liquid-impervious assembly of thermoplastic synthetic resin; and

thermoplastic synthetic fibers covering said opposite surfaces of said breathable liquid-impervious sheet,

said thermoplastic synthetic fibers comprising continuous fibers,

said breathable liquid-impervious sheet being intermittently bonded to said continuous thermoplastic synthetic fibers on said opposite surfaces,

said breathable liquid-impervious sheet having a maximum breathability of about 200 sec/100 cc, and a water resistance of at least about 300 mm.- -

Please add new Claims 4-10 as follows:

- - 4. The breathable liquid-impervious composite sheet according to claim 1, wherein said continuous thermoplastic synthetic fibers comprise layers that have a breathability that is equal to a breathability of said breathable liquid-impervious sheet .- -

- 5. The breathable liquid-impervious composite sheet according to claim 1, wherein said continuous thermoplastic synthetic fibers comprise layers that have a breathability that is greater than a breathability of said breathable liquid-impervious sheet .- -

- 6. The breathable liquid-impervious composite sheet according to claim 1, wherein said continuous thermoplastic synthetic fibers have a basis weight of about 10 to about 100 g/m<sup>2</sup>.- -

- 7. The breathable liquid-impervious composite sheet according to claim 1, wherein said continuous thermoplastic synthetic fibers are sealed together at intersections thereof.- -

- 8. The breathable liquid-impervious composite sheet according to claim 1, wherein said breathable liquid-impervious sheet is intermittently bonded to said continuous thermoplastic synthetic fibers at discrete bond regions.- -

- 9. The breathable liquid-impervious composite sheet according to claim 8, wherein the each of the discrete bond regions comprises an area of about 0.5 to about 10 mm<sup>2</sup>.- -

- 10. The breathable liquid-impervious composite sheet according to claim 8, wherein a total area of all of the discrete bond regions comprises about 1 to about 30% of a total area of the composite sheet.- -

• • • R E M A R K S • • •

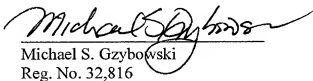
By the present Preliminary Amendment, the specification and claim have been revised to incorporate changes made to the international application prior to national phase entry and to more clearly describe applicants' invention in accordance with the requirements of 35 U.S.C. § 112.

Care has been taken so as to avoid the addition of new matter in the specification and claims.

Entry of the present Preliminary Amendment prior to the examination of the application is respectfully requested.

In the event applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, applicants hereby petition therefor and authorize that any charges be made to Deposit Account No. 02-0385, Baker & Daniels.

Respectfully submitted,

  
Michael S. Gzybowski  
Reg. No. 32,816

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MSG/mln/214009

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Changes Made to Specification Paragraphs

The first full paragraph on page 2 has been amended as follows:

It is [a principal] an object of this invention to [improve the composite sheet of prior art and] provide a composite sheet [being] that is free from generation of fibrous waste and [offering] offers a comfortable touch.

The second full paragraph on page 2 has been amended as follows:

[The object set forth above is achieved, according to this invention, by a] The breathable liquid-impervious composite sheet [comprising] according to the present inventoin comprises a breathable liquid-impervious sheet made of thermoplastic synthetic resin [and] that is covered with thermoplastic synthetic fibers[, the breathable liquid-impervious composite sheet being characterized by that the] The synthetic fibers are continuous fibers[, the] The sheet made of synthetic resin has its opposite surfaces covered with the continuous fibers and the sheet made of synthetic resin is intermittently bonded to the continuous fibers on the opposite surfaces.

The first full paragraph on page 3 has been amended as follows:

[According to one preferred embodiment of this invention, the] The sheet made of synthetic resin is [selected from a film made of thermoplastic synthetic resin and a nonwoven fabric made of thermoplastic synthetic fiber. According to another preferred embodiment of this invention, the breathable liquid-impervious composite sheet has the] an air-permeable and liquid-impervious assembly of thermoplastic fibers, the assembly having a maximum breathability of 200 sec/100 cc as measured in accordance with the method B of JIS (Japanese Industrial



Standards) L 1096 and a water resistance of at least 300 mm as measured in accordance with the method A of JIS L 1092.

The paragraph beginning on page 4 and continuing on page 5 has been amended as follows:

The intermediate layer 3 is formed by a breathable liquid-impervious sheet made of thermoplastic synthetic resin, for example, stretched film 8 made of thermoplastic synthetic resin such as polyethylene. The stretched film 8 has a thickness of 0.01 - 0.1 mm and [containing] contains inorganic filler grains of calcium carbonate or barium sulfate. The intermediate layer 3 may be formed also [by] from a fibrous assembly such as a melt blown nonwoven fabric made of polypropylene or the like. Breathable liquid-impervious nature of the intermediate layer 3 can be quantitatively expressed by breathability and water resistance. Preferably, the intermediate layer 3 has the maximum breathability of 200 sec/100 cc as measured in accordance with the [method] method B of JIS L 1096 and a water resistance of at least 300 mm as measured in accordance with the method A of JIS L 1092.

#### Changes Made to Claims

Claim 1 has been amended as follows:

1. (Amended) A breathable liquid-impervious composite sheet comprising:

a breathable liquid-impervious sheet [made] having opposite surfaces and comprising an air-pervious and liquid-impervious assembly of thermoplastic synthetic resin; and

[and covered with] thermoplastic synthetic [fibers,] fibers covering said opposite surfaces of said breathable liquid-impervious [composite sheet being characterized by that] sheet, said thermoplastic synthetic fibers [are] comprising continuous fibers,

[said sheet made of synthetic resin has its opposite surfaces that are covered with said continuous fibers and]

said breathable liquid-impervious sheet [made of synthetic resin is] being intermittently bonded to said continuous thermoplastic synthetic fibers on said opposite [surfaces.] surfaces,  
said breathable liquid-impervious sheet having a maximum breathability of about 200 sec/100 cc. and a water resistance of at least about 300 mm.

Claim 2 has been deleted.

Claim 3 has been deleted.

Claim 4 has been added as follows:

4. The breathable liquid-impervious composite sheet according to claim 1, wherein said continuous thermoplastic synthetic fibers comprise layers that have a breathability that is equal to a breathability of said breathable liquid-impervious sheet .

Claim 5 has been added as follows:

5. The breathable liquid-impervious composite sheet according to claim 1, wherein said continuous thermoplastic synthetic fibers comprise layers that have a breathability that is greater than a breathability of said breathable liquid-impervious sheet .

Claim 6 has been added as follows:

6. The breathable liquid-impervious composite sheet according to claim 1, wherein said continuous thermoplastic synthetic fibers have a basis weight of about 10 to about 100 g/m<sup>2</sup>.

Claim 7 has been added as follows:

7. The breathable liquid-impervious composite sheet according to claim 1, wherein said continuous thermoplastic synthetic fibers are sealed together at intersections thereof.

Claim 8 has been added as follows:

8. The breathable liquid-impervious composite sheet according to claim 1, wherein said breathable liquid-impervious sheet is intermittently bonded to said continuous thermoplastic synthetic fibers at discrete bond regions.

Claim 9 has been added as follows:

9. The breathable liquid-impervious composite sheet according to claim 8, wherein the each of the discrete bond regions comprises an area of about 0.5 to about 10 mm<sup>2</sup>.

Claim 10 has been added as follows:

10. The breathable liquid-impervious composite sheet according to claim 8, wherein a total area of all of the discrete bond regions comprises about 1 to about 30% of a total area of the composite sheet.

2/ppts

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BREATHABLE LIQUID-IMPERVIOUS COMPOSITE SHEET

## TECHNICAL FIELD OF THE INVENTION

This invention relates to breathable liquid-impervious composite sheets as stock material for disposable garments such as disposable working clothes.

## RELATED ART

A breathable liquid-impervious composite sheet is well known, which comprises a breathable liquid-impervious film of thermoplastic synthetic resin and a nonwoven fabric of thermoplastic synthetic fiber laminated on one surface of the film. Such a sheet has been used, for example, as a backsheet of a disposable diaper. The film makes this backsheet breathable and liquid-impervious and the nonwoven fabric gives this backsheet cloth-like soft touch.

In the composite sheet of prior art, the nonwoven fabric comprises staple fibers each having a length of 50 mm which may sometimes fall off from the composite sheet. In view of this, this composite sheet of prior art is not suitable as stock material for gowns or working clothes used in medical site or in food plant wherein generation of dust, dirt and fibrous waste are prohibited. This composite sheet of prior art is

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disadvantageous also in that its one surface is defined by the film destined to come directly in contact with the wearer's skin. Some of the wearers have antipathy to a touch peculiar to the film and, also in view of this, it is not preferable to use the composite sheet of prior art as stock material for gowns or the like which inevitably comes in direct contact with the wearer's skin.

It is a principal object of this invention to improve the composite sheet of prior art and provide a composite sheet being free from generation of fibrous waste and offering a comfortable touch.

#### DISCLOSURE OF THE INVENTION

The object set forth above is achieved, according to this invention, by a breathable liquid-impervious composite sheet comprising a breathable liquid-impervious sheet made of thermoplastic synthetic resin and covered with thermoplastic synthetic fibers, the breathable liquid-impervious composite sheet being characterized by that the synthetic fibers are continuous fibers, the sheet made of synthetic resin has its opposite surfaces covered with the continuous fibers and the sheet made of synthetic resin is intermittently bonded to the continuous fibers on the opposite surfaces.

According to one preferred embodiment of this invention, the sheet made of synthetic resin is selected from a film made of thermoplastic synthetic resin and a nonwoven fabric made of thermoplastic synthetic fiber. According to another preferred embodiment of this invention, the breathable liquid-impervious composite sheet has the maximum breathability of 200 sec/100 cc as measured in accordance with the method B of JIS (Japanese Industrial Standards) L 1096 and a water resistance of at least 300 mm as measured in accordance with the method A of JIS L 1092.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a composite sheet according to this invention; and

Fig. 2 is an exploded perspective view of the composite sheet.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

Details of a breathable liquid-impervious composite sheet will be more fully understood from the description given hereunder with reference to the accompanying drawings.

Fig. 1 is a perspective view of a composite sheet according to this invention and Fig. 2 is an exploded perspective view of the composite sheet. A composite sheet 1

has upper and lower layers 2, 4 and an intermediate layer 3 disposed between these upper and lower layers 2, 4. The upper and lower layers 2, 4 have a breathability equal to or higher than that of the intermediate layer 3. The upper and lower layers 2, 4 respectively comprise a plurality of continuous fibers 6, 7 extending to describe irregular curves on upper and lower surfaces of the intermediate layer 3. The continuous fibers 6 of the upper layer 2 and the continuous fibers 7 of the lower layer 4 respectively have a basis weight of 10 ~ 100 g/m<sup>2</sup> and may be respectively sealed together at their intersections. The continuous fibers 6, 7 may be selected from a group including polypropylene fiber and conjugated fiber comprising polypropylene or polyester as a core and polyethylene as a sheath.

The intermediate layer 3 is formed by a breathable liquid-impervious sheet made of thermoplastic synthetic resin, for example, stretched film 8 made of thermoplastic synthetic resin such as polyethylene. The stretched film 8 has a thickness of 0.01 ~ 0.1 mm and containing inorganic filler grains of calcium carbonate or barium sulfate. The intermediate layer 3 may be formed also by a fibrous assembly such as a melt blown nonwoven fabric made of polypropylene or the like. Breathable liquid-impervious nature of the

intermediate layer 3 can be quantitatively expressed by breathability and water resistance. Preferably, the intermediate layer 3 has the maximum breathability of 200 sec/100 cc as measured in accordance with the method B of JIS L 1096 and a water resistance of at least 300 mm as measured in accordance with the method A of JIS L 1092.

The upper and lower layers 2, 4 and the intermediate layer 3 are bonded together in bond regions 11 (See Fig. 1) intermittently formed over the composite sheet 1. It should be understood that such bond regions are not shown in Fig. 2 showing the composite sheet in an exploded perspective view. While it is not critical how to configure the bond regions 11, each of these bond regions 11 has an area of  $0.5 \sim 10 \text{ mm}^2$  and a total area of them occupies  $1 \sim 30 \%$  of the composite sheet's surface area. Bonding of the respective layers 2 ~ 4 may be carried out not only by means of sealing technique but also by means of suitable adhesive such as hot melt adhesive.

The composite sheet formed in the manner as has been described above is advantageously free from an apprehensive generation of fibrous waste when this composite sheet is used as stock material for working clothes or gowns for surgical operation. This is for the reason that the upper and lower layers comprise the continuous fibers. Additionally, the



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upper and lower layers present a cloth-like touch and therefore the wearer does not experience a feeling of incompatibility possibly presented by the film of thermoplastic synthetic resin even when the working clothes come in direct contact with the wearer's skin.

Accordingly, this composite sheet is suitable as the surface material of disposable garment for which the breathable and liquid-impervious nature is required, for example, disposable working clothes, disposable gowns for surgical operation, disposable trousers, disposable shorts or disposable diapers.

## C L A I M S

1. A breathable liquid-impervious composite sheet comprising a breathable liquid-impervious sheet made of thermoplastic synthetic resin and covered with thermoplastic synthetic fibers, said breathable liquid-impervious composite sheet being characterized by that said synthetic fibers are continuous fibers, said sheet made of synthetic resin has its opposite surfaces covered with said continuous fibers and said sheet made of synthetic resin is intermittently bonded to said continuous fibers on said opposite surfaces.
2. A breathable liquid-impervious composite sheet according to Claim 1, wherein said sheet made of synthetic resin is selected from film made of thermoplastic synthetic resin and nonwoven fabric made of thermoplastic synthetic fiber.
3. A breathable liquid-impervious composite sheet according to Claim 1, wherein said breathable liquid-impervious composite sheet has the maximum breathability of 200 sec/100 cc as measured in accordance with the method B of JIS L 1096 B and a water resistance of at least 300 mm as measured in accordance with the method A of JIS L 1092.

FIG. 1

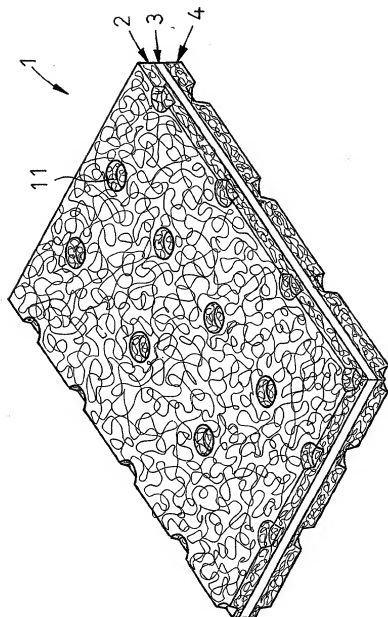
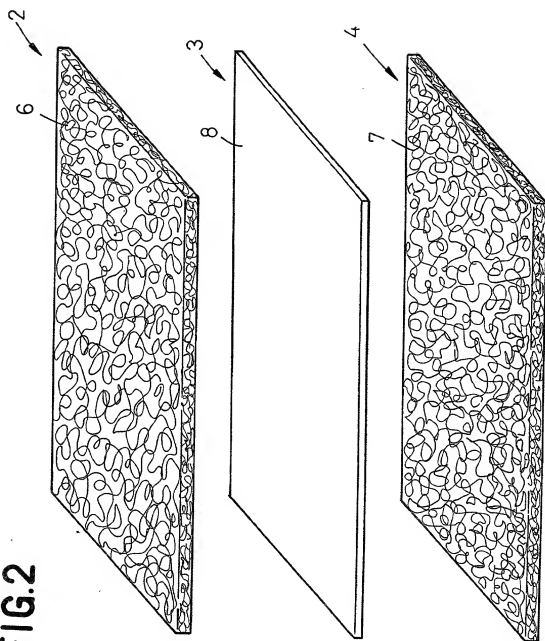


FIG. 2



PCT/USA NATIONAL DECLARATION AND POWER OF ATTORNEY  
FOR U.S. PATENT APPLICATIONS  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
UNDER 35 U.S.C. SECTION 371(c) (4)

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name:

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the invention described and

claimed in international application No. PCT/JP00/04664 entitled: BREATHABLE LIQUID-IMPERVIOUS COMPOSITE SHEET, filed July 12, 2000

and as amended on June 15, 2001 (if any), which I have reviewed, and I understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above and for which I solicit a patent; that I do not know and do not believe that this invention was ever known or used in the United States of America before my or our invention or discovery thereof, or patented or described in any printed publication in any country before my or our invention or discovery thereof, or more than one year prior to my international application; that this invention was not in public use or on sale in the United States of America for more than one year prior to my international application; that this invention has not been patented or made the subject of an inventor's certificate issued before the date of my international application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months before my international application; that I acknowledge my duty to disclose information of which I am aware which is material to patentability of this application; and that prior to filing said international application, applications for patent or inventor's certificate on this invention or discovery which have been filed by me or my legal representatives or assigns in any country foreign to the United States of America are as follows:

- (a) none filed more than 12 months prior to said international application, unless named below:
- (b) earliest filed less than 12 months prior to said international application (the priority of which is hereby claimed under 35 U.S.C. Section 365):

Japanese Application No. 11-198218 filed July 12, 1999

I hereby claim the benefit under Title 35, United States Code, §120, of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information material to patentability as defined in Title 37, Code of Federal Regulations, §1.56, which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
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As a named inventor, I hereby appoint John F. Hoffman, Regis. No. 26,280; Anthony Niewyk, Regis. No. 24,871; Kevin R. Erdaan, Regis. No. 33,687; Michael D. Smith, Regis. No. 40,181; Michael S. Gzybowski, Regis. No. 32,816; Michael D. Schwartz, Regis. No. 44,326; Scott M. Lohnes, Regis. No. 45,451; Steven M. Hanley, Regis. No. P-46,756; Adam F. Cox, Regis. No. P-46,644; Arthur R. Whale, Regis. No. 18,778; Edward J. Brain, Regis. No. 37,212; Michael D. Beck, Regis. No. 32,722; Deborah R. Beck, Regis. No. 37,370; Jeffrey A. Michael, Regis. No. 37,394; Eric J. Groen, Regis. No. 32,230; Gerard T. Gallagher, Regis. No. 32,679; and Robert D. Null, Regis. No. 40,746; of BAKER & DANIELS, as attorney(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

SEND CORRESPONDENCE TO:

DIRECT TELEPHONE CALLS TO:

Michael S. Gzybowski  
BAKER & DANIELS  
111 East Wayne Street, Suite 800  
Fort Wayne, IN 46802

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I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from \_\_\_\_\_ as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from who instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

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